

We claim:

1        1.        A PDC insert comprising:

2                a.        a plug section;

3                b.        a pedestal section atop the plug section; and

4                c.        a step between the plug section and the pedestal section.

1        2.        The insert of claim 1, wherein the insert defines an axis, and wherein the pedestal  
2        section has a circular cross section perpendicular to the axis.

1        3.        The insert of claim 2, wherein the insert defines an axis, and wherein the pedestal  
2        section has a circular cross section perpendicular to the axis.

1        4.        The insert of claim 1, further comprising a plug shoulder between the plug and the  
2        step, and wherein the plug shoulder is covered with PDC.

1        5.        The insert of claim 1, wherein the pedestal has a top and a sidewall, and further  
2        comprising a pedestal shoulder between the pedestal top and sidewall, and wherein the  
3        pedestal shoulder is covered with PDC.

1        6.        The insert of claim 1, further comprising:

2                a.        a plug shoulder between the plug and the step, and wherein the plug  
3                shoulder is covered with PDC; and

4           b.       wherein the pedestal has a top and a sidewall, and further comprising a  
5                    pedestal shoulder between the pedestal top and sidewall, and wherein the  
6                    pedestal shoulder is covered with PDC.

1       7.       The insert of claim 6, wherein each of the plug shoulder and the pedestal shoulder  
2       defines a cutting surface for cutting down hole formation.

8.       The insert of claim 5, wherein the sidewall is slanted.

1       9.       A PDC insert comprising:

2           a.       a plug section;

3           b.       a pedestal section atop the plug section, and wherein the pedestal section  
4                    has a top and a side wall, the side wall having a frustoconical bevel surface  
5                    thereon; and

6           c.       a step between the plug section and the pedestal section.

1       10.      The insert of claim 9, further comprising a first convex curved surface on the side  
2       wall above the frustoconical bevel surface and a second convex curved surface on the  
3       side wall below the frustoconical bevel surface.

1       11.      The insert of claim 9, wherein the insert defines an axis and further wherein the  
2       insert defines a back rake angle, and further wherein the bevel defines an angle to the axis  
3       approximately equal to the back rake angle.

12. A PDC insert comprising:

- a. a plug section;
- b. a pedestal section atop the plug section and having a circular, flat top and a flat bevel surface forming a chord across the top; and
- c. a step between the plug section and the pedestal section

1 13. The insert of claim 12, wherein the insert defines an axis and further wherein the  
2 insert defines a back rake angle, and further wherein the flat bevel surface defines an  
3 angle to the axis approximately equal to the back rake angle.